

EXHIBIT N

Analysis of Infringement of U.S. Patent No. 6,836,691 by Silicon Laboratories, Inc.
(Based on Public Information Only)

Plaintiff Ocean Semiconductor LLC (“Ocean Semiconductor”), provides this preliminary and exemplary infringement analysis with respect to infringement of U.S. Patent No. 6,836,691, entitled “METHOD AND APPARATUS FOR FILTERING METROLOGY DATA BASED ON COLLECTION PURPOSE” (the “691 patent) by Silicon Laboratories, Inc. (“SILABS”). The following chart illustrates an exemplary analysis regarding infringement by Defendant SILABS’ semiconductor products, systems, devices, components, integrated circuits, and products containing such circuits, fabricated or manufactured using Applied Materials, Inc.’s (“Applied Materials”) platforms, and/or framework, including Applied Materials’ software and APC system, including the E3 platform hardware and/or software (collectively, “E3”) and/or other APC system and platform hardware and/or software. Such products include, without limitation, wireless products (e.g., EFR32XG2X family), internet of things products (e.g., EFM8BB10F8G-QFN20, EFM8BB10F2A-QFN20, EFM8BB10F2G-QFN20, EFM8BB10F2I-QFN20, EFM8BB10F4A-QFN20, EFM8BB10F4G-QFN20, EFM8BB10F4I-QFN20, EFM8BB10F8A-QFN20, EFM8BB10F8G-QSOP24, EFM8BB10F8G-SOIC16, EFM8BB10F8I-QFN20, EFM8BB10F8I-QSOP24, EFM8BB10F8I-SOIC16, EFM8BB21F16A-QFN20, EFM8BB21F16G-QFN20, EFM8BB21F16G-QSOP24, EFM8BB21F16I-QFN20, EFM8BB21F16I-QSOP24, EFM8BB22F16A-QFN28, EFM8BB22F16G-QFN28, EFM8BB22F16I-QFN28, EFM8BB31F16A-4QFN24, EFM8BB31F16A-5QFN32, EFM8BB31F16G-QFN24, EFM8BB31F16G-QFN32, EFM8BB31F16G-QFP32, EFM8BB31F16G-QSOP24, EFM8BB31F16I-4QFN24, EFM8BB31F16I-5QFN32, EFM8BB31F16I-QFN24, EFM8BB31F16I-QFN32, EFM8BB31F16I-QFP32, EFM8BB31F16I-QSOP24, EFM8BB31F32A-4QFN24, EFM8BB31F32A-5QFN32, EFM8BB31F32G-QFN24, EFM8BB31F32G-QFN32, EFM8BB31F32G-QFP32, EFM8BB31F32G-QSOP24, EFM8BB31F32I-4QFN24, EFM8BB31F32I-5QFN32, EFM8BB31F32I-QFN24, EFM8BB31F32I-QFN32, EFM8BB31F32I-QFP32, EFM8BB31F32I-QSOP24, EFM8BB31F64A-4QFN24, EFM8BB31F64A-5QFN32, EFM8BB31F64G-QFN24, EFM8BB31F64G-QFN32, EFM8BB31F64G-QFP32, EFM8BB31F64G-QSOP24, EFM8BB31F64I-4QFN24, EFM8BB31F64I-5QFN32, EFM8BB31F64I-QFN24, EFM8BB31F64I-QFN32, EFM8BB31F64I-QFP32, EFM8BB31F64I-QSOP24), infrastructure products (e.g., Si5332A-GM1, Si5332A-GM2, Si5332A-GM3, Si5332B-GM1, Si5332B-GM2, Si5332B-GM3, Si5332C-GM1, Si5332C-GM2, Si5332C-GM3, Si5332D-GM1, Si5332D-GM2, Si5332D-GM3, Si5332E-GM1, Si5332E-GM2, Si5332E-GM3, Si5332F-GM1, Si5332F-GM2, Si5332F-GM3, Si5332G-GM1, Si5332G-GM2, Si5332G-GM3, Si5332H-GM1, Si5332H-GM2, Si5332H-GM3, Si5332A-GM1, Si5332A-GM2, Si5332A-GM3, Si5332B-GM1, Si5332B-GM2, Si5332B-GM3, Si5332C-GM1, Si5332C-GM2, Si5332C-GM3, Si5332D-GM1, Si5332D-GM2, Si5332D-GM3, Si5332E-GM1, Si5332E-GM2, Si5332E-GM3, Si5332F-GM1, Si5332F-GM2, Si5332F-GM3, Si5332G-GM1, Si5332G-GM2, Si5332G-GM3, Si5332H-GM1, Si5332H-GM2, Si5332H-GM3), broadcast products (e.g., Si2160, Si2162, Si2164, Si2180, Si2181, Si2182, Si2183), access products (e.g., Si3000, Si3402-GM, Si3404-GM, Si3406-GM, Si34062-GM, Si3462-GM, Si3471A-IM, microcontrollers (e.g., Tiny Gecko series, EFM8 Busy Bee), buffers (e.g., Si5330x), oscillators (e.g., Si54x), clock generators (e.g., Si534x), jitter attenuators (e.g., Si539x), synchronous ethernet (e.g., Si5383/48/88), isolation products (e.g., Si86xx, Si87xx, Si88xx, Si823x, Si827x, Si828x, Si823Hx, Si890x, Si892x, Si82Hx, Si838x, Si834x, and Si875x), interface products (e.g., ethernet controllers, LC controllers, bridges), timing products (e.g., buffers, clock generators, oscillators, and network synchronizers), sensors (e.g., humidity, magnetic, optical, temperature, and biometric), audio & radio products (e.g., automotive tuners, and radios), power products (e.g., power management ICs, powered drivers, and PSE controllers), TV & video products (e.g., digital demodulators and TV tuners), modem & DAA products (e.g., voice modems), voice products (e.g., codec, proSLICs, and DAA), power over ethernet

devices (e.g., power source equipment and powered device ICs)), and similar systems, products, devices, and integrated circuits (collectively, the "'691 Infringing Instrumentalities").

The analysis set forth below is based only upon information from publicly available resources regarding the '691 Infringing Instrumentalities, as SILABS has not yet provided any non-public information.

Unless otherwise noted, Ocean Semiconductor contends that SILABS directly infringes the '691 patent in violation of 35 U.S.C. § 271(g) by using, selling, and/or offering to sell in the United States, and/or importing into the United States, the '691 Infringing Instrumentalities. The following exemplary analysis demonstrates that infringement. Unless otherwise noted, Ocean Semiconductor further contends that the evidence below supports a finding of indirect infringement under 35 U.S.C. § 271(b) in conjunction with other evidence of liability.

Unless otherwise noted, Ocean Semiconductor believes and contends that each element of each claim asserted herein is literally met through SILABS' provision or importation of the '691 Infringing Instrumentalities. However, to the extent that SILABS attempts to allege that any asserted claim element is not literally met, Ocean Semiconductor believes and contends that such elements are met under the doctrine of equivalents. More specifically, in its investigation and analysis of the '691 Infringing Instrumentalities, Ocean Semiconductor did not identify any substantial differences between the elements of the patent claims and the corresponding features of the '691 Infringing Instrumentalities, as set forth herein. In each instance, the identified feature of the '691 Infringing Instrumentalities performs at least substantially the same function in substantially the same way to achieve substantially the same result as the corresponding claim element.

Ocean Semiconductor notes that the present claim chart and analysis are necessarily preliminary in that Ocean Semiconductor has not obtained substantial discovery from SILABS nor has SILABS disclosed any detailed analysis for its non-infringement position, if any. Further, Ocean Semiconductor does not have the benefit of claim construction or expert discovery. Ocean Semiconductor reserves the right to supplement and/or amend the positions taken in this preliminary and exemplary infringement analysis, including with respect to literal infringement and infringement under the doctrine of equivalents, if and when warranted by further information obtained by Ocean Semiconductor, including but not limited to information adduced through information exchanges between the parties, fact discovery, claim construction, expert discovery, and/or further analysis.

USP 6,836,691	Infringement by the '691 Accused Instrumentalities
<p>1. A method comprising: collecting metrology data related to the processing of workpieces in a plurality of tools;</p>	<p>To the extent that the preamble of claim 1 is limiting, Applied E3 collects metrology data related to the processing of workpieces in a plurality of tools.</p> <p>For example, Applied E3 collects data from process tools:</p> <p>“For example, when a lot is processed on a metrology tool, E3 SPC collects the tool data and performs the statistical analysis. E3 then correlates the SPC data with the equipment data for the same lot, identifies problems with the specific parameters and sensors for that tool and immediately takes appropriate corrective action.”</p> <p><i>See Applied E3 Statistical Process Control (“SPC”) Datasheet (“Applied E3 SPC Datasheet”), available at http://www.appliedmaterials.com/files/E3SPCDatasheet.pdf (last visited May 4, 2020).</i></p> <p>As a further example, Applied E3 collects metrology data at each process step:</p> <p>“The Applied E3 FDC module is the only fault detection and analysis solution in the market today built on a common platform with integration to statistical process control (SPC), equipment performance tracking (EPT), run to run (R2R) control and advanced data mining (ADM). The FDC module continuously monitors equipment sensors and events against performance metrics using statistical analysis techniques, and provides proactive and rapid feedback on equipment health. Using the E3 FDC module, engineers can analyze sensor data from manufacturing equipment, detect out-of-norm conditions and relate them to problems with tools.”</p> <p><i>See Applied E3 FDC Datasheet, available at http://www.appliedmaterials.com/files/E3FDCDatasheet.pdf (last visited May 4, 2020) (annotated).</i></p> <p><i>See also “Advanced Data Mining Techniques to Improve IC Fab Yield,” available at https://www.appliedmaterials.com/nanochip/nanochip-fab-solutions/december-2014/data-mining-techniques (last visited Oct. 12, 2020):</i></p> <p>“Once the tool priority sensors are obtained, the next step is to collect the relevant FDC and metrology data. This data is obtained from the available FDC software products and may include Applied’s E3 and process equipment charting technologies, or software from third party suppliers. Tool sensor priorities are identified as P1, P2, P3 or P4, depending on the influence of the sensor parameter on the yield. For the definition of sensors in each category, refer to table 2.”</p>

	<p>As a further example, Applied Materials has disclosed in a patent application “collecting, with a system, data including test substrate data or other metrology data and fault detection data for maintenance recovery of at least one manufacturing tool in a manufacturing facility . . .”</p> <p><i>See U.S. Patent Application Publication No. 2016/0342147 A1; see also U.S. Patent Application Publication No. US 2019/0361429 A1; U.S. Patent Application Publication No. 2020/0004234 A1.</i></p>
generating context data for the metrology data, the context data including collection purpose data;	<p>Applied E3 generates context data for the metrology data including collection purpose data.</p> <p>For example, Applied E3 generates context data for the metrology data including collection purpose data:</p> <p>“Different types of data that are generated and used for various purposes in an IC fabrication unit are event logs data, unit processes data, integration data, inspection & review data, metrology data and parametric and final yield data. The size of each type of data varies from a few gigabytes/day to a few terabytes/day depending on production capacities. “Unit processes” constitute 30 to 40% of total process steps involved in making an IC. All the data mining techniques described in later sections were mostly used to analyse this “Unit Processes” data. The Equipment Data Acquisition is typically performed by one or more factory data gathering or analysis software applications (clients) using different standards like SECS (Semiconductor Equipment Communications Standard), GEM (Generic Equipment Model) or Interface A. One example of this type of client is the Applied Materials E3□. E3 is the only equipment engineering</p>

system solution that combines statistical process control (SPC), fault detection and classification (FDC), equipment performance tracking (EPT), advanced data mining (ADM), run-to-run control (R2R) and tool automation on a unified platform.”

See “Applications of Data Mining in Integrated Circuits Manufacturing,” (“Applications of Data Mining”) at 100, available at <https://airccj.org/CSCP/vol4/csit42709.pdf> (last visited May 4, 2020) (annotated).

As a further example, E3 collects metrology data with other context data relevant to the purpose of, e.g., fault detection, as shown below:

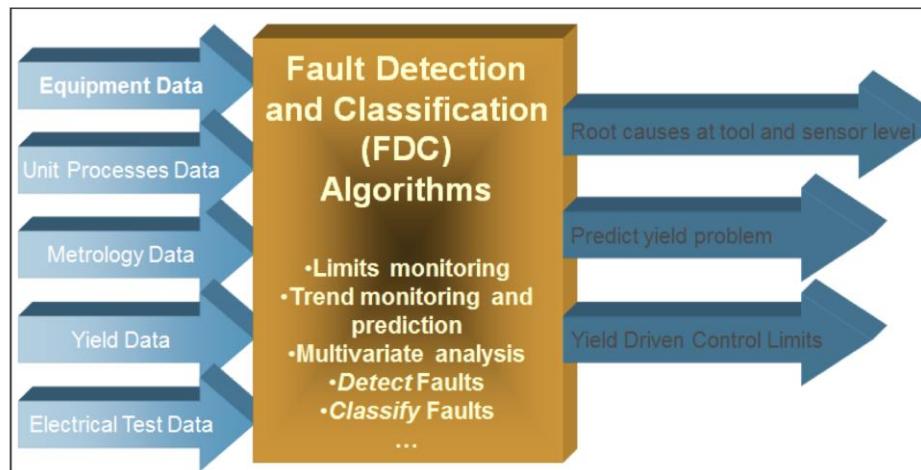


Figure 1. Inputs and outputs of FDC algorithms in IC fabs.

See Applications of Data Mining at 100.

As yet another example, the context data can include collection purpose data such as sensor priorities. *See also “Advanced Data Mining Techniques to Improve IC Fab Yield,” available at <https://www.appliedmaterials.com/nanochip/nanochip-fab-solutions/december-2014/data-mining-techniques> (last visited Oct. 12, 2020):*

SENSOR NAME	SENSOR UNITS	SENSOR PRIORITY	TYPICAL SAMPLES/ SEC
Bottom Temperature Reading	deg C	P1	2
H ₂ Gas Flow	sccm	P1	1
RF Forward Power	W	P1	4
Process Pressure	mtorr	P1	2
Foreline Pressure	mtorr	P2	1
E-Chuck Voltage	V	P2	1
Gas Line Pressure	psi	P3	0.5
Target Life	kWh	P3	0.01
Heat Exchanger Water Temperature	deg C	P4	0.1

Table 1. Tool priority sensor list.

CATEGORY	DEFINITION
P1	Confirmed to have caused a yield or reliability problem
P2	Expected to cause a yield or reliability problem, but not validated
P3	Expected not to cause a yield or reliability problem, but not validated
P4	Known to be a non-issue

Table 2. Sensor priority definitions.

As a further example, Applied Materials has created an equipment health monitoring solution with Micron Technologies that “been developed into the Applied E3™ APC (Fault Detection-FD and R2R control) solution leveraging Micron’s use of the solution fab-wide.” See “Deploying an Equipment Health Monitoring Dashboard and Assessing Predictive

	Maintenance,” (“Deploying an Equipment Health Monitoring Dashboard”) at 106 <i>available at https://vdocuments.site/ieee-2013-24th-annual-semi-advanced-semiconductor-manufacturing-conference-58db5fd291675.html</i> (last visited Oct. 12, 2020) (emphasis added). The project also aimed to “assess the feasibility of PdM using the health indicator data as one source of input.” <i>See id.</i> at 106. In the Micron Technologies project, “historical FD, maintenance, metrology and context data is merged and then mined to determine if models could be developed to predict specified maintenance events.” <i>See id.</i> at 106. Applied Materials undertook a similar project with Intel Corporation. <i>See id.</i> at 106.
filtering the metrology data based on the collection purpose data;	<p>Applied E3 filters metrology data based on the collection purpose data.</p> <p>For example, in Applied E3, the metrology data is filtered based on the collection purpose data using fault detection and classification algorithms to identify, for example, root causes at tool and sensor level, predict yield problem, and yield driven control limits, as shown below:</p>
	Figure 1. Inputs and outputs of FDC algorithms in IC fabs.
and conducting a process control activity related to one of the tools	<i>See Applications of Data Mining at 100.</i>

based on the filtered metrology data.

For example, based on the filtered metrology data, the E3 conducts a process control activity (e.g., to detect faults, classify faults, etc.) to identify, for example, root causes at tool and sensor level, predict yield problem, and yield driven control limits as shown below:

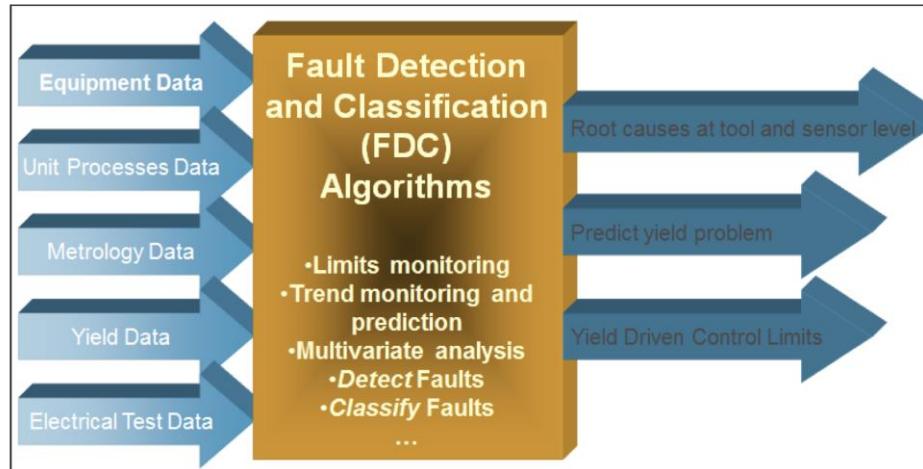


Figure 1. Inputs and outputs of FDC algorithms in IC fabs.

See Applications of Data Mining at 100.